FIG.1

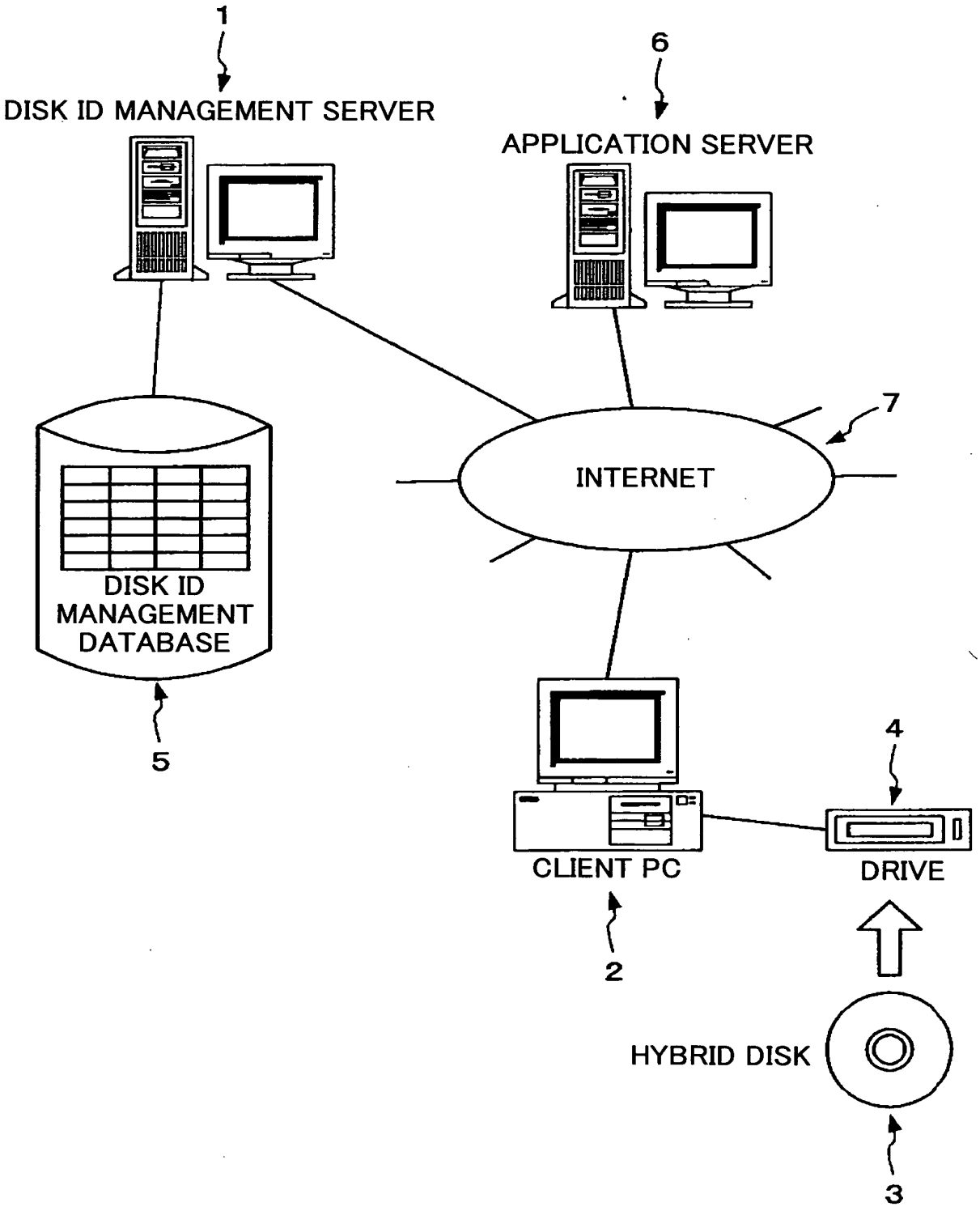

1
DISK ID MANAGEMENT SERVER
6
APPLICATION SERVER
7
INTERNET
DISK ID MANAGEMENT DATABASE
5
4
CLIENT PC
DRIVE
2
HYBRID DISK
3

FIG.2

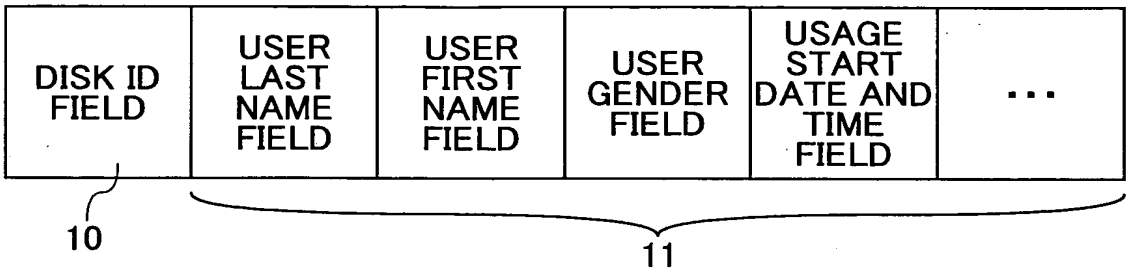

DISK ID FIELD
USER LAST NAME FIELD
USER FIRST NAME FIELD
USER GENDER FIELD
USAGE START DATE AND TIME FIELD
...
10
11
USAGE INFORMATION FIELD GROUP

FIG.3

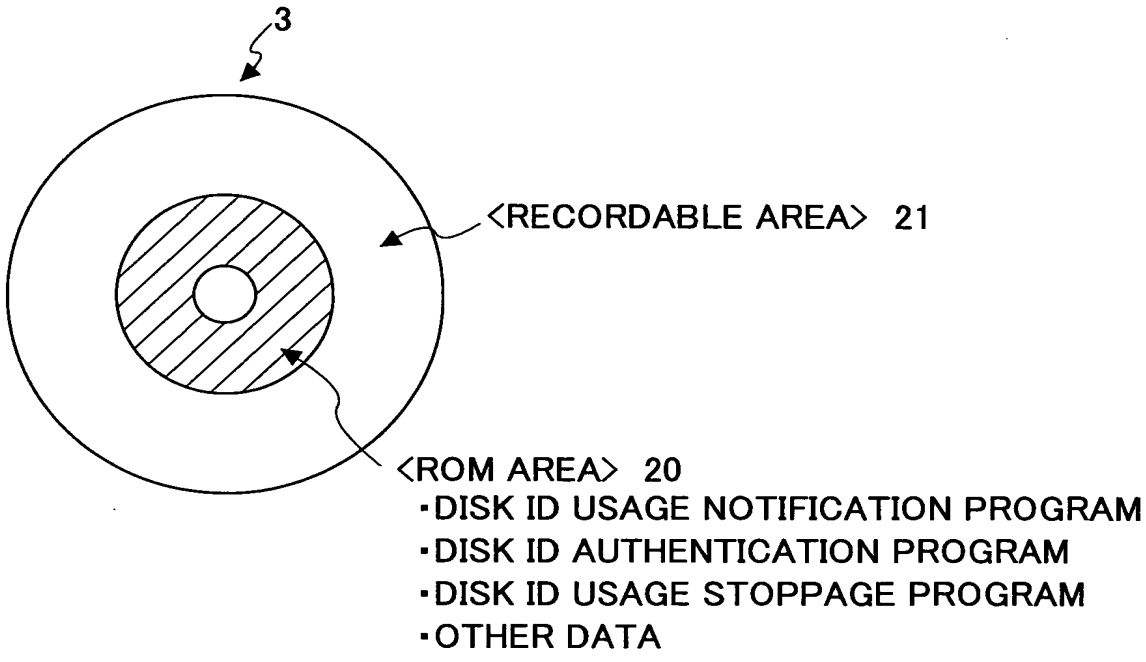

3
<RECORDABLE AREA> 21
<ROM AREA> 20
・DISK ID USAGE NOTIFICATION PROGRAM
・DISK ID AUTHENTICATION PROGRAM
・DISK ID USAGE STOPPAGE PROGRAM
・OTHER DATA

FIG.4A

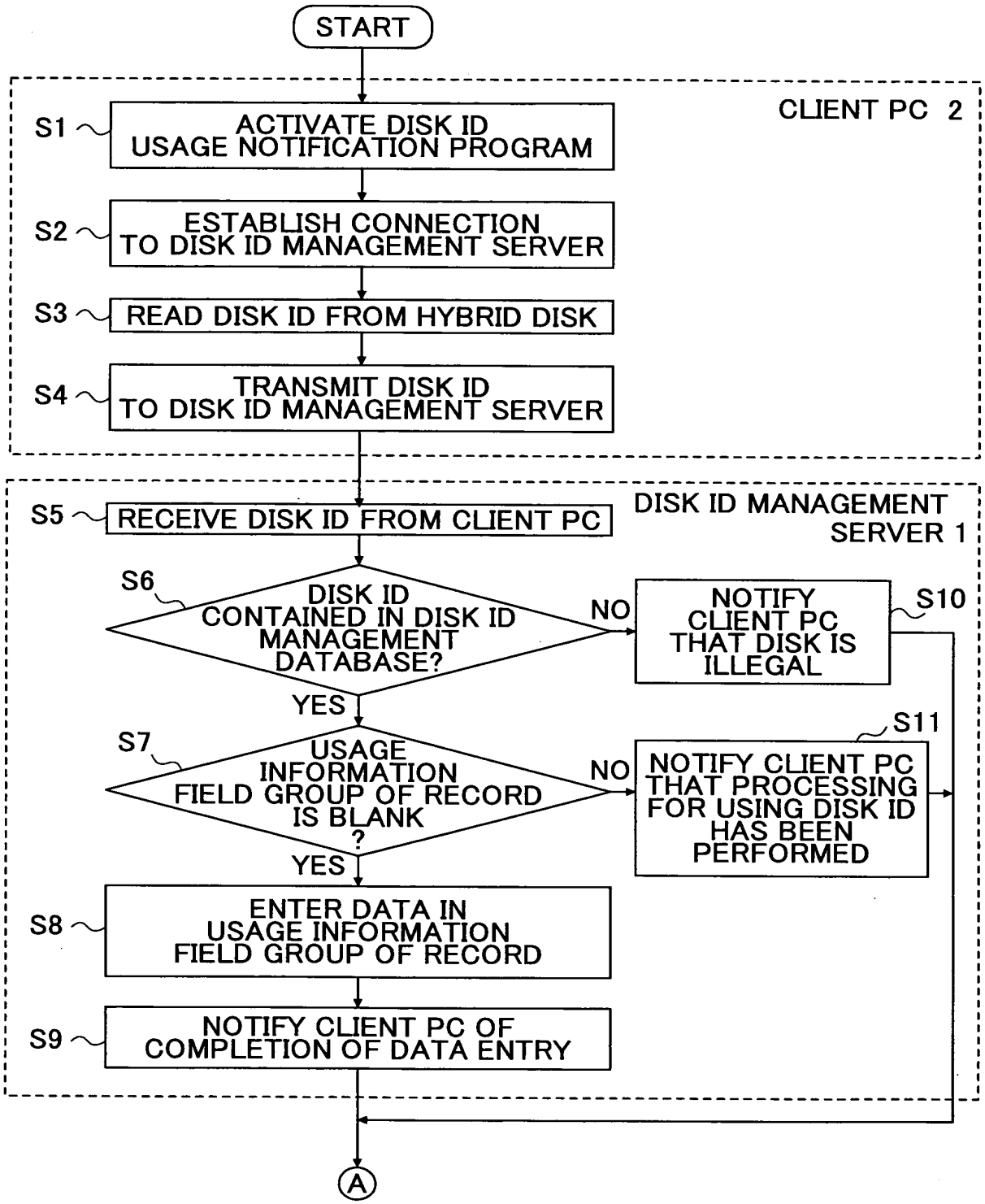

START
CLIENT PC 2
S1
ACTIVATE DISK ID USAGE NOTIFICATION PROGRAM
S2
ESTABLISH CONNECTION TO DISK ID MANAGEMENT SERVER
S3
READ DISK ID FROM HYBRID DISK
S4
TRANSMIT DISK ID TO DISK ID MANAGEMENT SERVER
DISK ID MANAGEMENT SERVER 1
S5
RECEIVE DISK ID FROM CLIENT PC
S6
DISK ID CONTAINED IN DISK ID MANAGEMENT DATABASE?
NO
S10
NOTIFY CLIENT PC THAT DISK IS ILLEGAL
YES
S7
USAGE INFORMATION FIELD GROUP OF RECORD IS BLANK ?
NO
S11
NOTIFY CLIENT PC THAT PROCESSING FOR USING DISK ID HAS BEEN PERFORMED
YES
S8
ENTER DATA IN USAGE INFORMATION FIELD GROUP OF RECORD
S9
NOTIFY CLIENT PC OF COMPLETION OF DATA ENTRY
A

FIG.4B

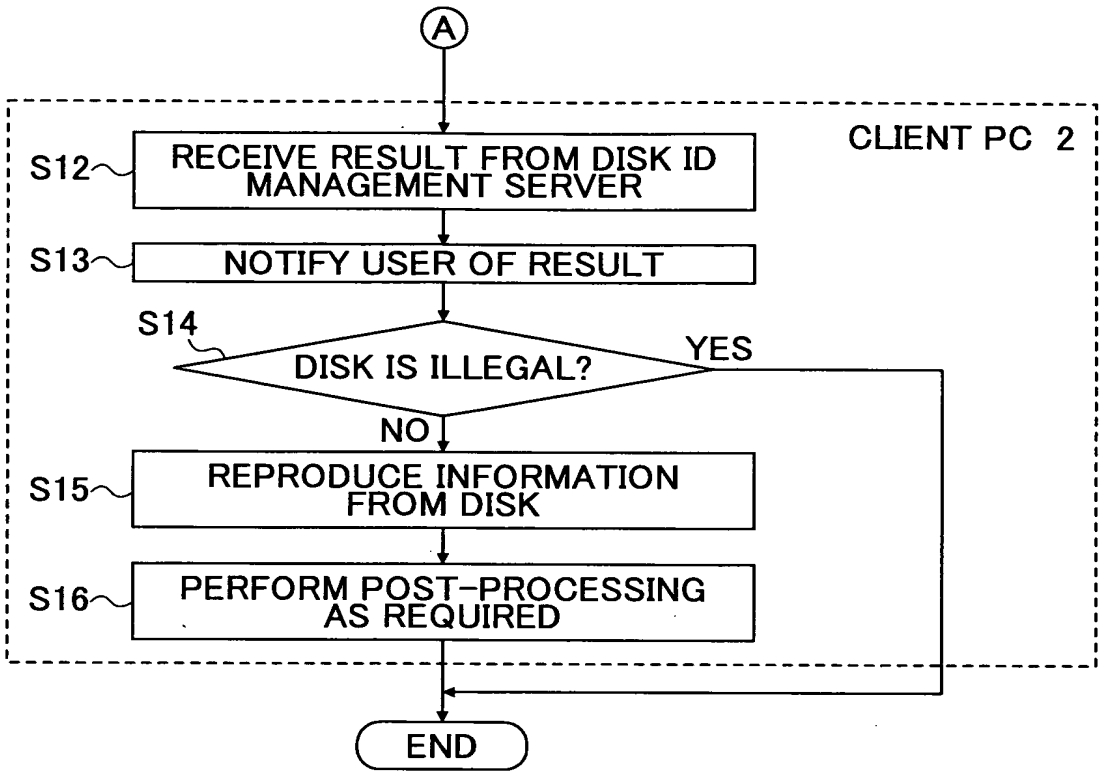

A
CLIENT PC 2
S12
RECEIVE RESULT FROM DISK ID MANAGEMENT SERVER
S13
NOTIFY USER OF RESULT
S14
DISK IS ILLEGAL?
YES
NO
S15
REPRODUCE INFORMATION FROM DISK
S16
PERFORM POST-PROCESSING AS REQUIRED
END

FIG.5A

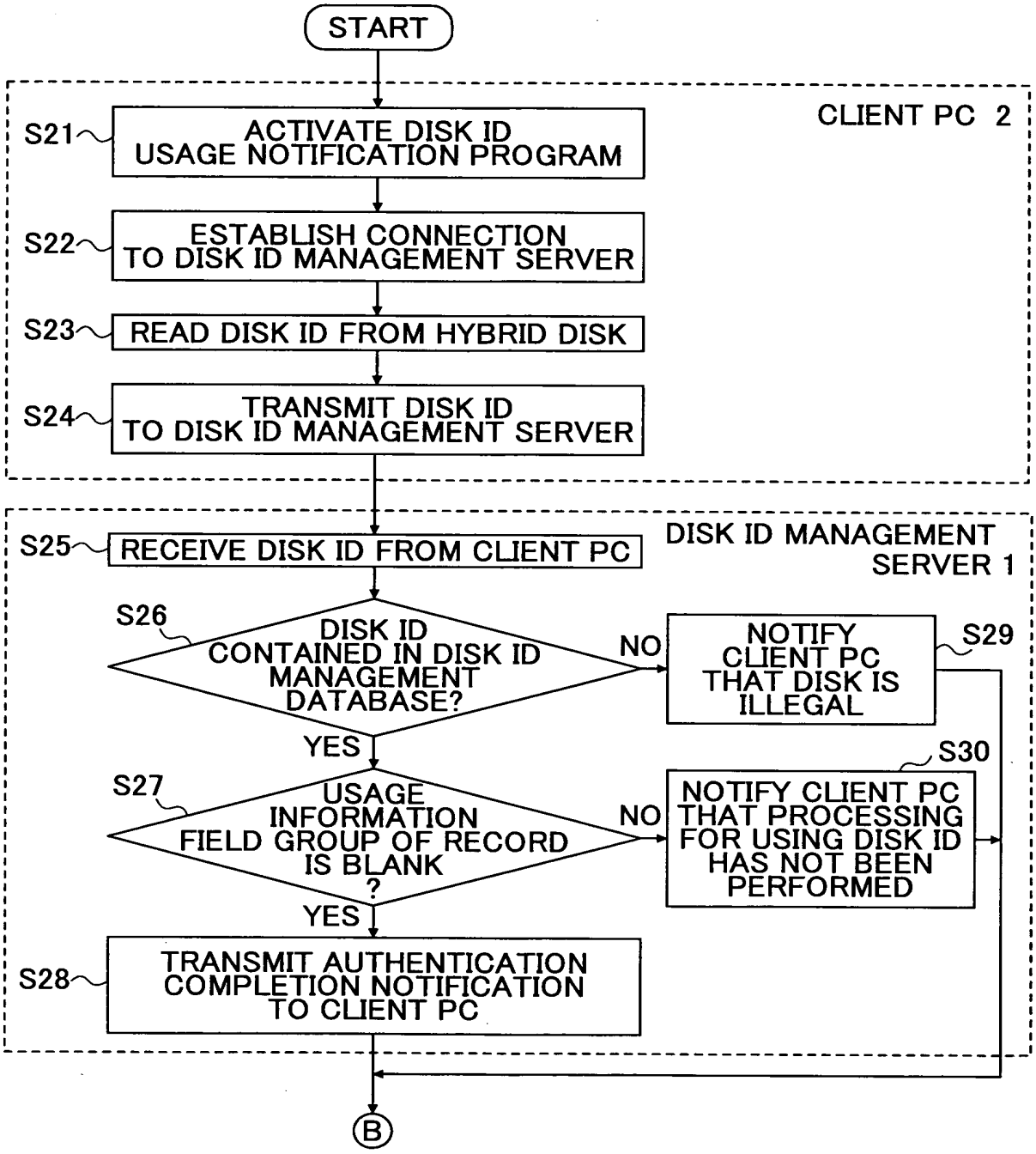

START
CLIENT PC 2
S21
ACTIVATE DISK ID USAGE NOTIFICATION PROGRAM
S22
ESTABLISH CONNECTION TO DISK ID MANAGEMENT SERVER
S23
READ DISK ID FROM HYBRID DISK
S24
TRANSMIT DISK ID TO DISK ID MANAGEMENT SERVER
DISK ID MANAGEMENT SERVER 1
S25
RECEIVE DISK ID FROM CLIENT PC
S26
DISK ID CONTAINED IN DISK ID MANAGEMENT DATABASE?
NO
S29
NOTIFY CLIENT PC THAT DISK IS ILLEGAL
YES
S27
USAGE INFORMATION FIELD GROUP OF RECORD IS BLANK ?
NO
S30
NOTIFY CLIENT PC THAT PROCESSING FOR USING DISK ID HAS NOT BEEN PERFORMED
YES
S28
TRANSMIT AUTHENTICATION COMPLETION NOTIFICATION TO CLIENT PC
B

FIG.5B

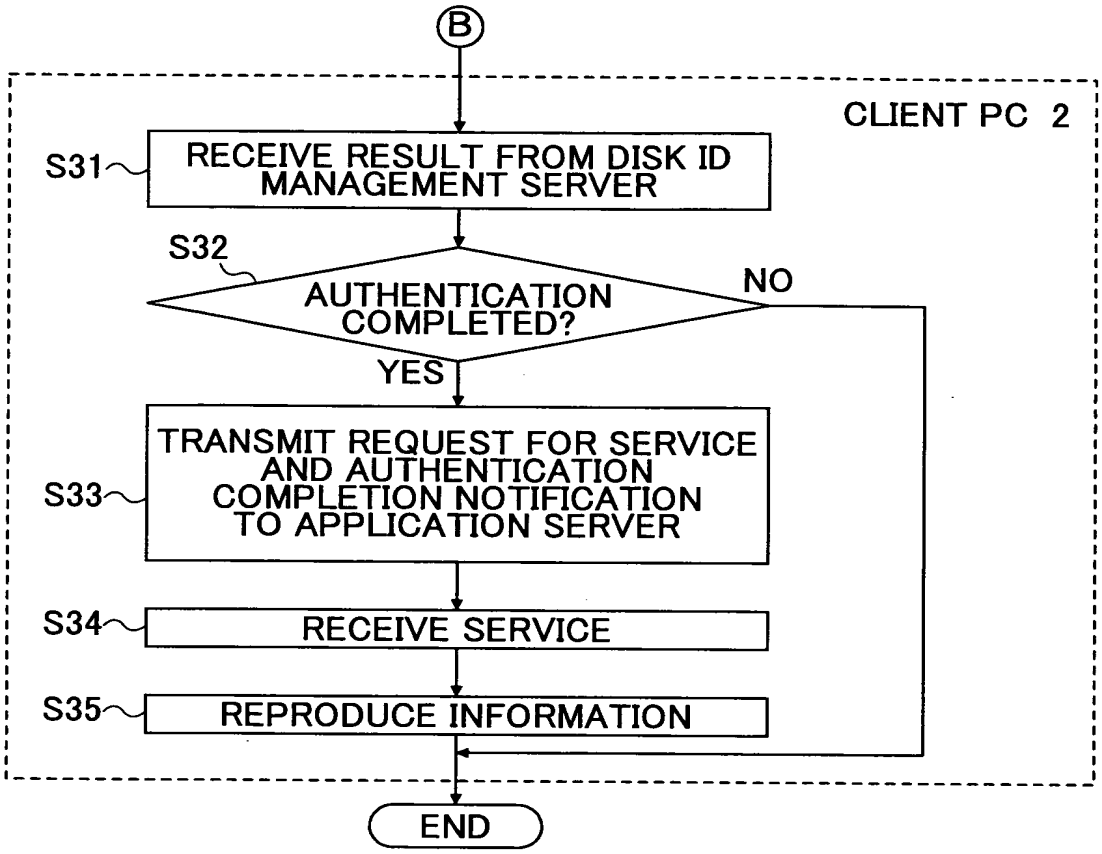

B
CLIENT PC 2
S31
RECEIVE RESULT FROM DISK ID MANAGEMENT SERVER
S32
AUTHENTICATION COMPLETED?
NO
YES
S33
TRANSMIT REQUEST FOR SERVICE AND AUTHENTICATION COMPLETION NOTIFICATION TO APPLICATION SERVER
S34
RECEIVE SERVICE
S35
REPRODUCE INFORMATION
END

FIG.6A

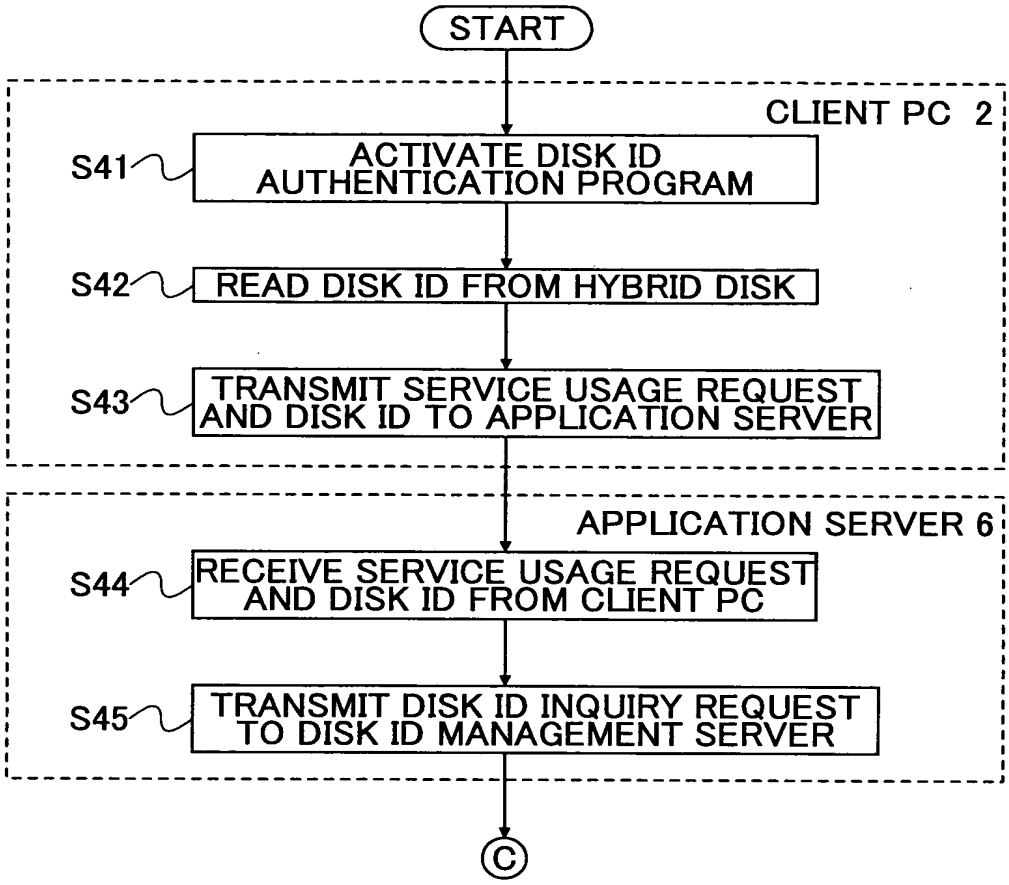

START
CLIENT PC 2
S41
ACTIVATE DISK ID AUTHENTICATION PROGRAM
S42
READ DISK ID FROM HYBRID DISK
S43
TRANSMIT SERVICE USAGE REQUEST AND DISK ID TO APPLICATION SERVER
APPLICATION SERVER 6
S44
RECEIVE SERVICE USAGE REQUEST AND DISK ID FROM CLIENT PC
S45
TRANSMIT DISK ID INQUIRY REQUEST TO DISK ID MANAGEMENT SERVER
C

FIG.6B

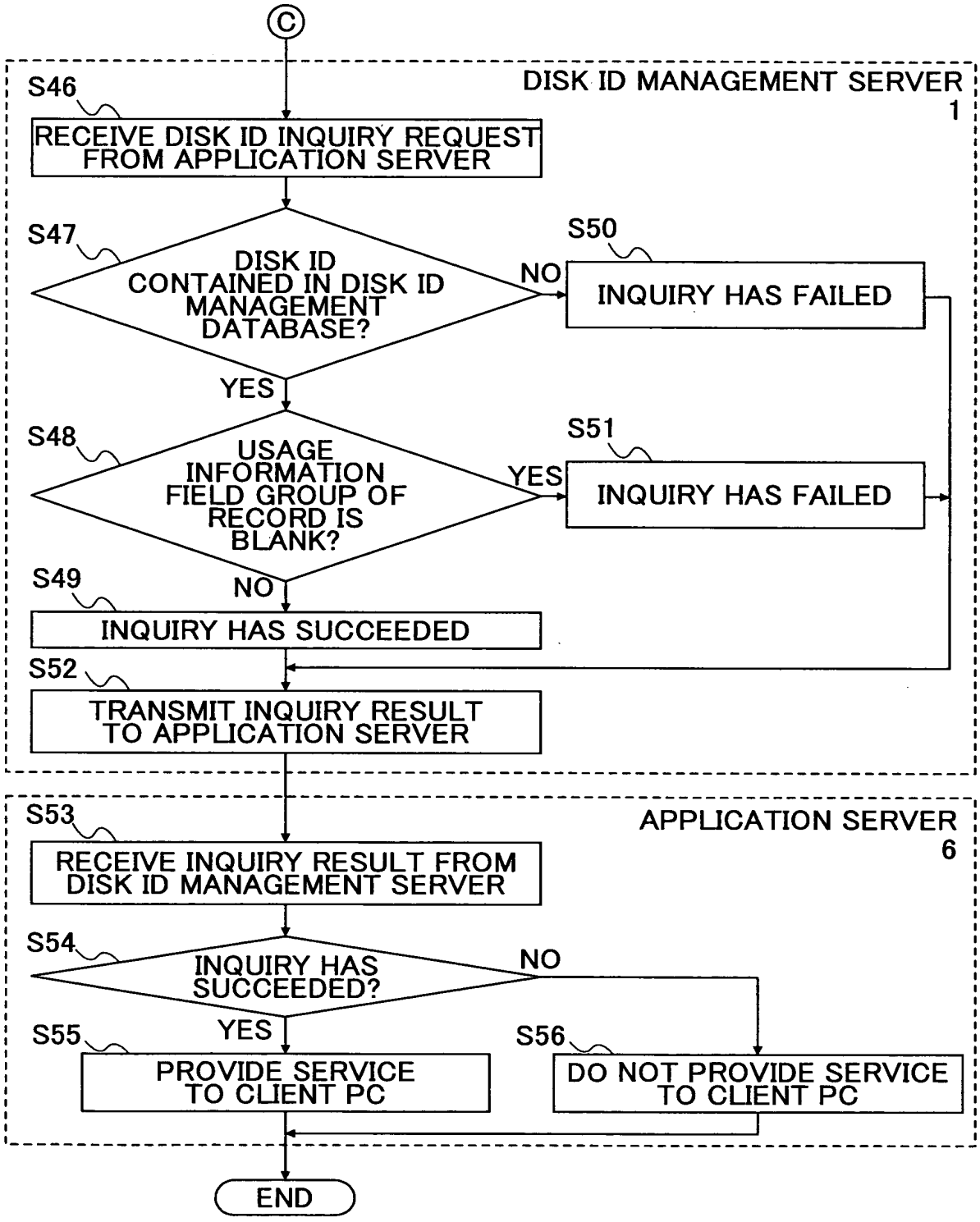

C
DISK ID MANAGEMENT SERVER 1
S46
RECEIVE DISK ID INQUIRY REQUEST FROM APPLICATION SERVER
S47
DISK ID CONTAINED IN DISK ID MANAGEMENT DATABASE?
NO
S50
INQUIRY HAS FAILED
YES
S48
USAGE INFORMATION FIELD GROUP OF RECORD IS BLANK?
YES
S51
INQUIRY HAS FAILED
NO
S49
INQUIRY HAS SUCCEEDED
S52
TRANSMIT INQUIRY RESULT TO APPLICATION SERVER
APPLICATION SERVER 6
S53
RECEIVE INQUIRY RESULT FROM DISK ID MANAGEMENT SERVER
S54
INQUIRY HAS SUCCEEDED?
NO
YES
S55
PROVIDE SERVICE TO CLIENT PC
S56
DO NOT PROVIDE SERVICE TO CLIENT PC
END

FIG.7

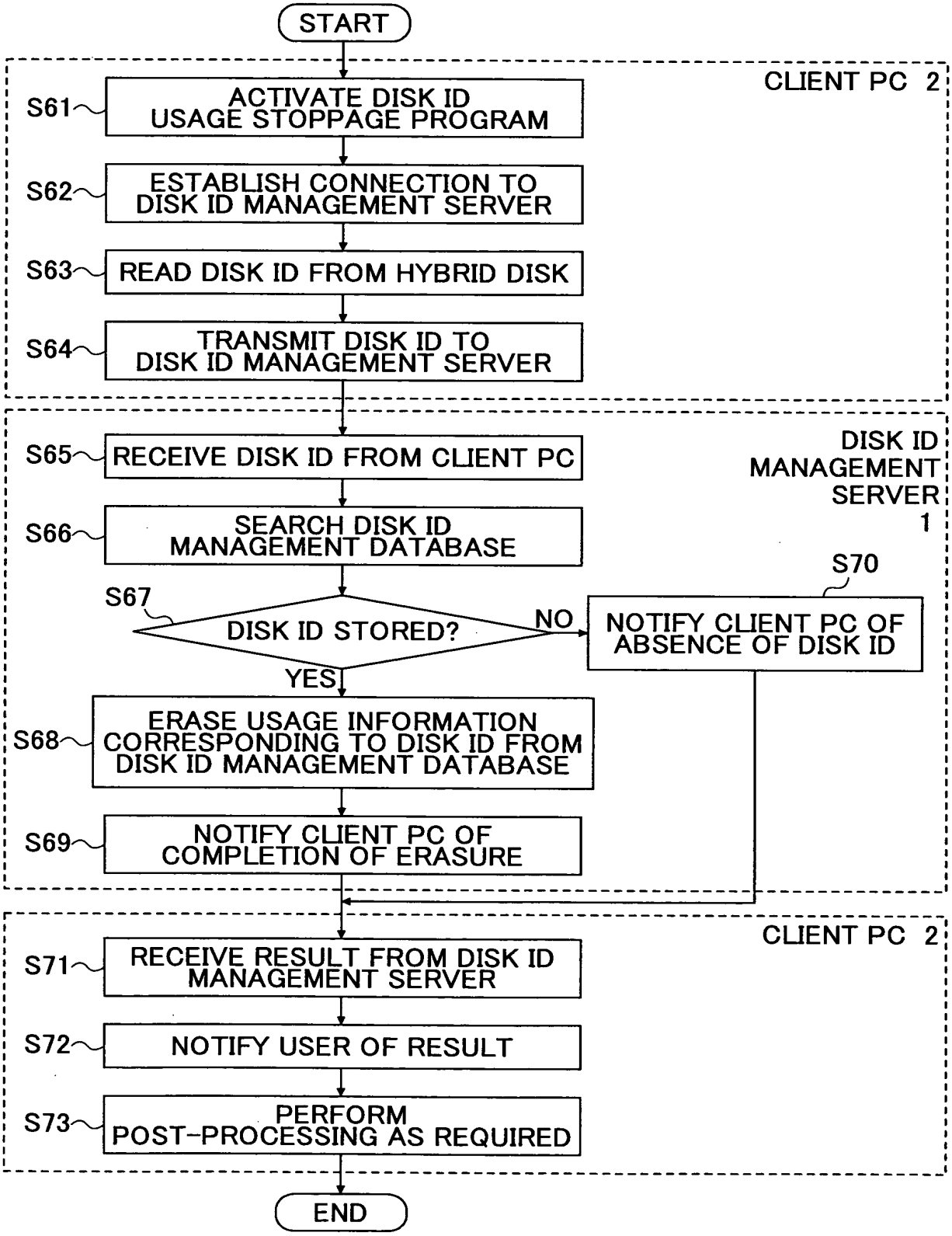

START
CLIENT PC 2
S61
ACTIVATE DISK ID USAGE STOPPAGE PROGRAM
S62
ESTABLISH CONNECTION TO DISK ID MANAGEMENT SERVER
S63
READ DISK ID FROM HYBRID DISK
S64
TRANSMIT DISK ID TO DISK ID MANAGEMENT SERVER
DISK ID MANAGEMENT SERVER 1
S65
RECEIVE DISK ID FROM CLIENT PC
S66
SEARCH DISK ID MANAGEMENT DATABASE
S67
DISK ID STORED?
NO
S70
NOTIFY CLIENT PC OF ABSENCE OF DISK ID
YES
S68
ERASE USAGE INFORMATION CORRESPONDING TO DISK ID FROM DISK ID MANAGEMENT DATABASE
S69
NOTIFY CLIENT PC OF COMPLETION OF ERASURE
CLIENT PC 2
S71
RECEIVE RESULT FROM DISK ID MANAGEMENT SERVER
S72
NOTIFY USER OF RESULT
S73
PERFORM POST-PROCESSING AS REQUIRED
END

FIG.8

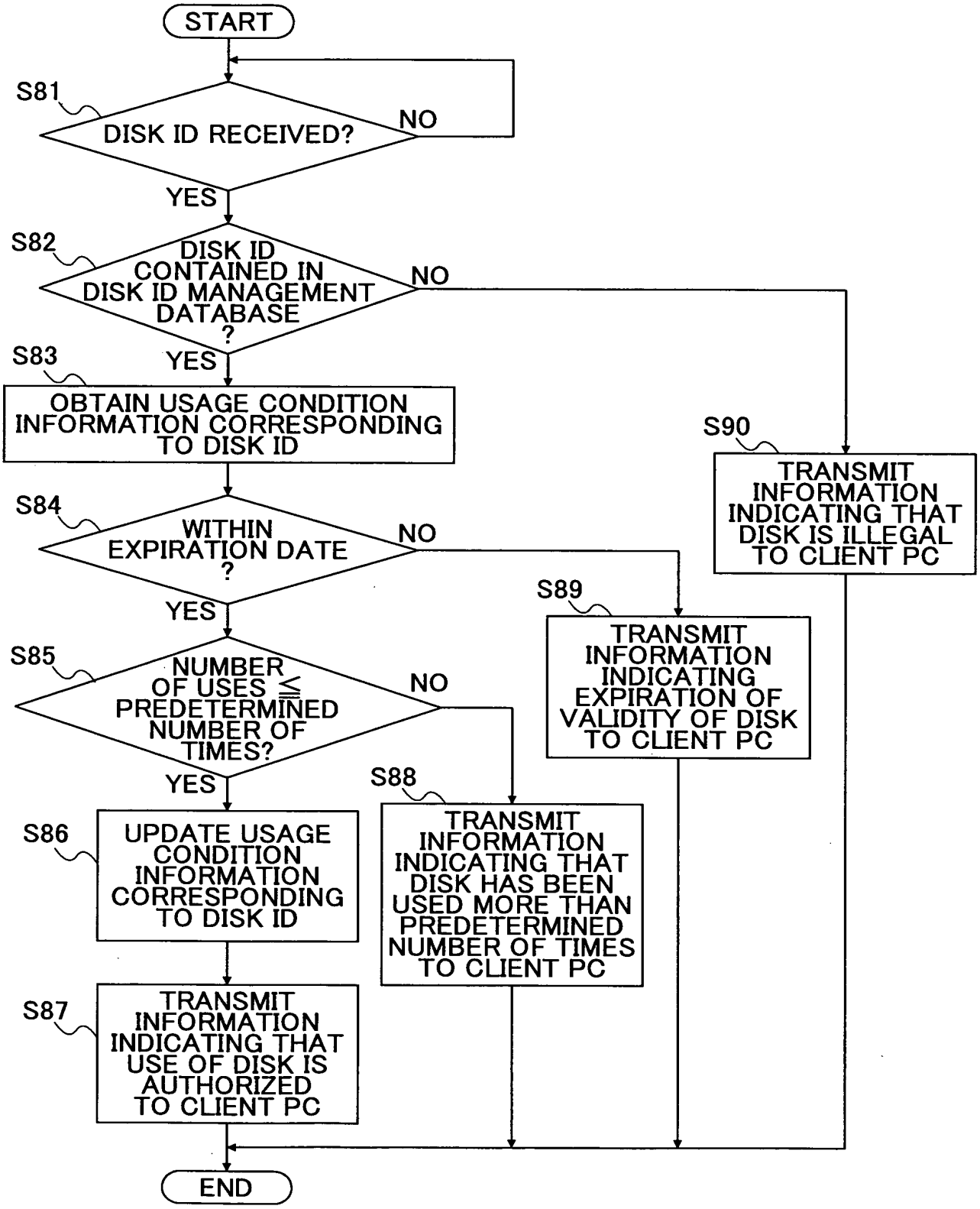
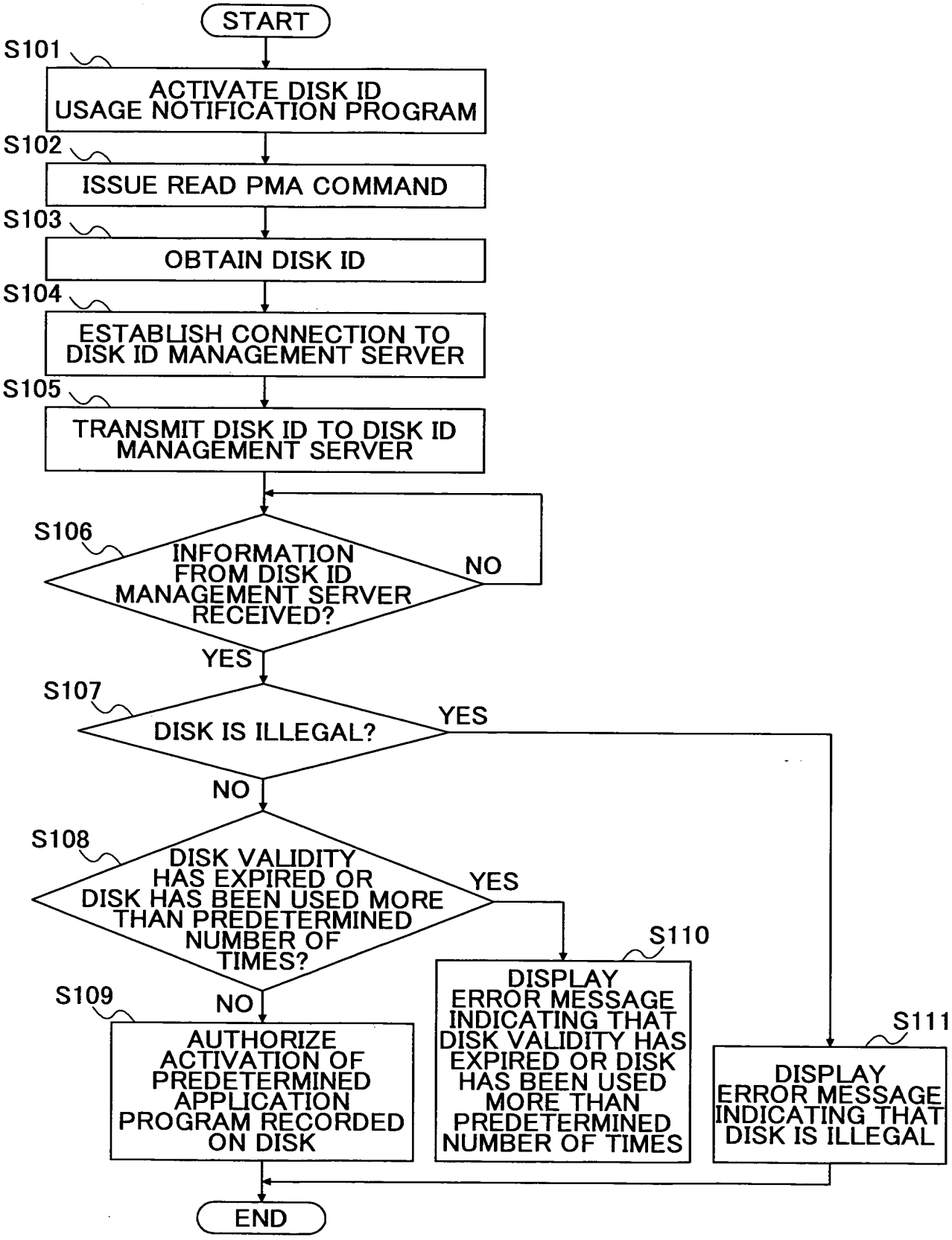

START
S81
DISK ID RECEIVED?
NO
YES
S82
DISK ID CONTAINED IN DISK ID MANAGEMENT DATABASE ?
NO
YES
S83
OBTAIN USAGE CONDITION INFORMATION CORRESPONDING TO DISK ID
S84
WITHIN EXPIRATION DATE ?
NO
YES
S85
NUMBER OF USES ≦ PREDETERMINED NUMBER OF TIMES?
NO
YES
S86
UPDATE USAGE CONDITION INFORMATION CORRESPONDING TO DISK ID
S87
TRANSMIT INFORMATION INDICATING THAT USE OF DISK IS AUTHORIZED TO CLIENT PC
S88
TRANSMIT INFORMATION INDICATING THAT DISK HAS BEEN USED MORE THAN PREDETERMINED NUMBER OF TIMES TO CLIENT PC
S89
TRANSMIT INFORMATION INDICATING EXPIRATION OF VALIDITY OF DISK TO CLIENT PC
S90
TRANSMIT INFORMATION INDICATING THAT DISK IS ILLEGAL TO CLIENT PC
END

FIG.9


START
S101
ACTIVATE DISK ID USAGE NOTIFICATION PROGRAM
S102
ISSUE READ PMA COMMAND
S103
OBTAIN DISK ID
S104
ESTABLISH CONNECTION TO DISK ID MANAGEMENT SERVER
S105
TRANSMIT DISK ID TO DISK ID MANAGEMENT SERVER
S106
INFORMATION FROM DISK ID MANAGEMENT SERVER RECEIVED?
NO
YES
S107
DISK IS ILLEGAL?
YES
NO
S108
DISK VALIDITY HAS EXPIRED OR DISK HAS BEEN USED MORE THAN PREDETERMINED NUMBER OF TIMES?
YES
NO
S109
AUTHORIZE ACTIVATION OF PREDETERMINED APPLICATION PROGRAM RECORDED ON DISK
S110
DISPLAY ERROR MESSAGE INDICATING THAT DISK VALIDITY HAS EXPIRED OR DISK HAS BEEN USED MORE THAN PREDETERMINED NUMBER OF TIMES
S111
DISPLAY ERROR MESSAGE INDICATING THAT DISK IS ILLEGAL
END